



# BUILDING COMMISSIONING

## for better public buildings

### CASE STUDY

#### NEW ARMY SUPPORT BUILDING NOT 'ALL THAT IT CAN BE'

When the 56,000-square-foot Army Aviation Support Facility was completed in Helena, Montana in the fall of 1999, it was expected to meet the military's needs, but from the beginning, problems were encountered. The building used more energy than anticipated when compared to similar military buildings in Montana. There were also numerous occupant comfort complaints.

After two years with the poor performing building, the Montana Department of Military Affairs partnered with the Montana Department of Environmental Quality to initiate a commissioning project to identify the problems and diagnose corrective action. The Montana DEQ, with funding from the Northwest Energy Efficiency Alliance and support from US DOE's Rebuild America Program, developed a scope of work and contracted with a local commissioning provider for retro-commissioning services.

The single-story building houses operation, maintenance and repair facilities for Army National Guard helicopters. It includes administrative offices, an operations center, classrooms, locker rooms, a large hanger, a supply area, shops and a paint booth. Approximately 60 people work in the facility during normal weekday hours. There is some limited weekend and night activity.

The commissioning project identified, diagnosed and recommended corrective action for approximately

over



Army Aviation Support Facility

"The Commissioning authority provided an outstanding report from a fresh perspective and identified several items that were not installed correctly."

- Chris Denning,  
Director of Facility Maintenance

#### COMMISSIONING QUICK FACTS

Building: Army Aviation Support Facility  
Location: Helena, MT  
Completion date: Fall, 2001  
Scope of project: Retro-commissioning  
Commissioning cost: \$11,820<sup>1</sup>  
First-year cost benefit: \$5,370<sup>2</sup>  
Annual energy savings: \$13,300<sup>3</sup>

<sup>1</sup> Commissioning providers fee only.

<sup>2</sup> Cost reduction or avoidance.

<sup>3</sup> Annual energy savings based on cost of electricity of \$0.0494/kWh and natural gas of \$0.755 /therm.



Army Aviation Support Facility

150 discrepancies. The mechanical systems were not particularly complex, but correctly programming the controls system to enable the various mechanical systems to operate appropriately and efficiently was more complex.

The commissioning provider functionally tested specific portions of the HVAC systems, control system, and lighting system and diagnosed corrective actions. They found dampers or linkage that were binding to prevent full opening and closing, plugged filters, equipment not connected to the control system, equipment that was incorrectly installed, and controls that were programmed incorrectly.

Most of the corrective actions addressed the occupant complaints of comfort and poor indoor air quality. The commissioned building now provides a comfortable, safe and productive working environment for the occupants, based on implementation of corrective action.

## LESSONS LEARNED

- Include commissioning early in the design phase, thus maximizing the benefits commissioning provides.
- To control retro-commissioning costs, prioritize and correct issues based on building owners needs.
- Involve the building owner in the commissioning process
- Today's HVAC control systems are very complex and need to be functionally tested.

## COMMISSIONING BENEFITS

- Reduced energy costs (operating costs)
- Increased occupant comfort and indoor air quality
- Enhanced maintenance and a facility improvement plan was developed
- Reduced operational deficiencies

"The advantage of commissioning is having an independent third party systematically and thoroughly perform inspections and verification tests to ensure that the systems are installed as designed and are operating according to the Owner's needs."

- John Phillips, P.E., Facility Improvement Corporation

## PROJECT PARTNERS

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